

Dredging Pilot/ Treatability Study



Environmental Dredging Pilot

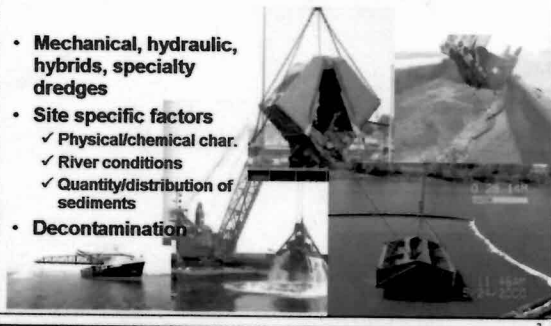
Provide necessary input early in FS for
informed remedial decision

Purpose:

- ✓ Evaluate dredging technology
- ✓ Equipment performance
- ✓ Resuspension rate/mass balance
- ✓ Dredging Production Rates
- ✓ Turbidity Levels
- ✓ Engineering Controls for full scale

Dredging Technologies Evaluation

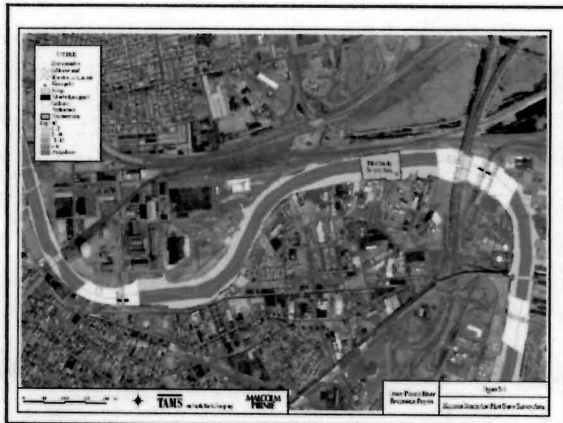
- Mechanical, hydraulic, hybrids, specialty dredges
- Site specific factors
 - ✓ Physical/chemical char.
 - ✓ River conditions
 - ✓ Quantity/distribution of sediments
- Decontamination



Dredging Technology Evaluation

Recommendations for Pilot:

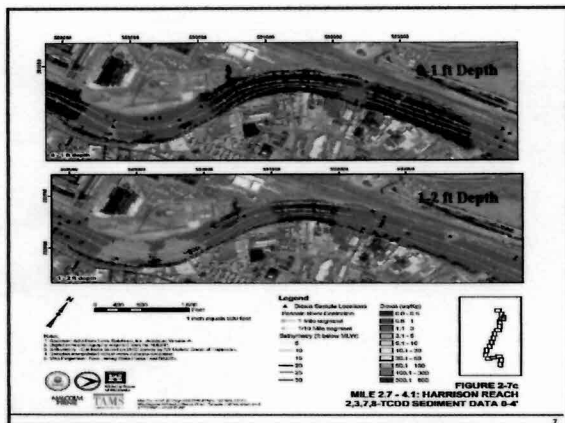
- ✓ Environmental Mechanical Dredging
 - Dewatering and decon technologies
 - Off-loading at decon facility – no pumping
 - Debris
 - Targeted small area- accuracy

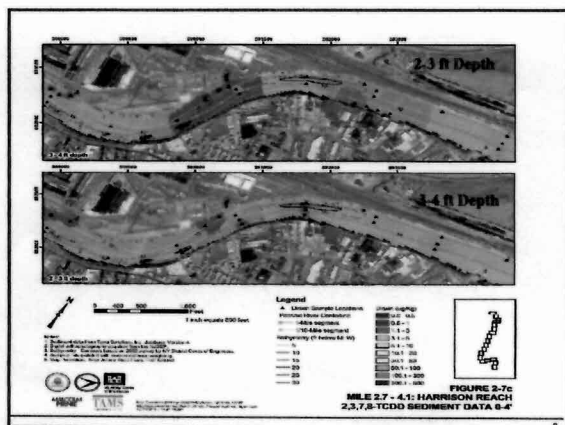


Dredging Pilot Activities (2003-04)

- Evaluation of Historical Data
 - Sediment chemistry/geotech properties
 - Hydrologic database
- Bathymetric Survey
- Side Scan Sonar

Determine specific location of dredging





Sediment Coring (July 12/13)

✓Chemical Characterization for:

- Dredging specifications (NJDOT RFP): 12/04
- Upper 2-ft material for decon technologies
- Determine concentration in exposed sediment after removal
- Resuspension Modeling
- Water Quality Monitoring during implementation

Staging Area: Fire Training Facility



13

Sediment Core Processing



14

Sediment for Decon Vendors

- ✓ EPA vessel to collect sediment for processing in advance of pilot
 - Sediment Washing – BioGenesis (60 gallons)
 - Thermal Destruction- Minergy (5 gallons)
 - Endesco (no request)
- ✓ Use of Van Veen Sampler from 15 cells

15

Dredging and Monitoring

- July 2005: 5,000 cyd over 5 days
- Two operating modes of dredge (reduced/max)
- **Water Quality Monitoring**
 - ✓ Before, during and after dredging
 - ✓ Upstream, at dredge and downstream locations
 - ✓ Multiple transect samples and at depth
 - ✓ TSS, turbidity, DO, trace metals and organics
- **Air Quality Monitoring**
- **Refine Resuspension Model**

16

Remaining Work Plans/Docs

- ✓ **Dredging Pilot Work Plan**
 - Dredging Specs
 - Water Quality Monitoring
 - Air Quality Monitoring
- ✓ **Decontamination Technology Work Plans**

17

Hydrodynamic Studies

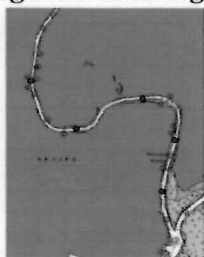
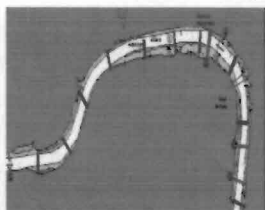
- ✓ **Characterize circulation and dispersive nature of river with tidal range and river discharge**
- ✓ **Aid in design of monitoring program for sediment plume during pilot**
- ✓ **Extrapolate from pilot to full-scale**
- ✓ **FS Sediment Transport Model**

18

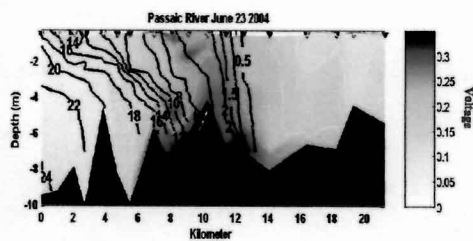
Hydrodynamic Studies

- ✓ July 2004-2005
- ✓ Rutgers, USGS & Team
- ✓ Long-term moorings and ship board surveys to characterize salinity and sediment structure over range of river flow
- ✓ Dye Studies: dispersive nature of material in water column

Long-term Moorings



Transects



Salinity and Turbidity Structure during Low Flow

- ✓ Salt wedge identified at Mile 7.5 at Newark
- ✓ Turbidity maximum at head of salt wedge
- ✓ Voltage of 0.35 = ~ 50 mg/l TSM; calibration necessary

Treatability Study